Web Traffic And Firm Performance: Evidence From The MENA Region

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ABSTRACT

Does the traffic generated by websites of firms signal anything to stock market participants? Does higher web-traffic translate into availability of more information and therefore lower agency problems? And if answers to above questions are in affirmative, does higher web-traffic traffic translate into better firm performance? This paper aims to answer these questions by documenting a positive relationship between the extent of web-traffic and firm performance in the MENA region during the 2010. We argue that higher web-traffic lowers the agency problems in firms by disseminating more information to stock market participants. Consequently, lower agency problems translate into better performance. Furthermore, we also show that agency reducing role of web-traffic is more pronounced in regimes where information environment is already bad. For example, our results show stronger impact of web-traffic on firm performance in civil law countries, firms with concentrated ownership, and firms with more intangible assets. All of these groups are characterized by higher agency problems. Our results, therefore, indicate that web-traffic can play a substitute for traditional governance mechanisms in the MENA region.

Keywords: Web Traffic; Information Disclosure; Emerging Markets; Firm Performance

1. INTRODUCTION

Emerging markets are characterized by weak and ineffective corporate governance mechanisms. For instance, Claessens and Fan (2003) document that corporate governance mechanisms (such as takeovers and boards of directors) are not functioning properly and efficiently in emerging markets. Prior literature shows that presence of family control, weak enforcement of investor protection laws, and lax implementation of anti-director rights contribute to ineffectiveness of corporate governance mechanisms in emerging markets. One of the implications of weak corporate governance mechanisms is that the culture of information disclosure could not evolve in these markets. Prior literature documents that managers and insiders do not disclose true information about their firms in emerging markets (Leuz et al., 2003). This results in exposing naive investors to an almost impossible task of assessing true value of firms. Therefore, it becomes hard for these investors to make any informed decision.

This paper argues that the extent of web-traffic is one such publicly available information that can help investors, especially naive investors, to make value relevant investment decisions. Using data from the MENA region (Morocco, Egypt, Saudi Arabia, United Arab Emirates, Jordan, Kuwait, and Bahrain), this paper shows that the extent of web-traffic positively effects firm performance. Our results are robust after controlling for several firm-specific characteristics. We ague that web-traffic measures investors' access to information regarding firms. Greater access to information can affect firm performance via number of channels. First, extent of agency problems is inversely related to the amount of available information. More dissemination of information that results via higher web-traffic reduces agency problems and leads to better performance of firms. Second, higher web-traffic corresponds to firm's recognition among investors (Bank et al., 2011). There are a couple of reasons behind considering web-traffic as a proxy for firm's recognition among investors. Anecdotal evidence suggests that the importance of the internet has grown many folds during the recent years. It is not only the source of largest pool of freely available information, but is also easily accessible by everyone and from everywhere. Therefore, higher web-traffic indicates the interest of individuals in accessing the information regarding a firm. Bank et al. (2011) complement our arguments by maintain that web-traffic assesses the degree of attention from uninformed investors.

We argue that higher recognition spurs interest among investors, increases their appetite to invest in more recognizable firms, and eventually leads to better stock price performance. Our argument is similar to Merton (1987) who documents better performance for firms with more recognition. In addition to effecting stock price performance, firm's recognition among investors also influences other measures of performance such as volume (Gervais et al., 2001; Hou et al., 2008). Grullon et al. (2004) document that investment decisions of both individual and institutional investors are influenced by firm's recognition among investors. They show that investors' buying decisions are more prone to firm's recognition than their selling decisions. Consequently, greater buying translates into pushing stock prices high (Barber and Odean, 2008). Consistent with our arguments, Da et al. (2009) also document that the prices of assets are increasing function of the number of internet enquiries. In another related study, Vlastakis and Markellos (2012) use data generated from Google search to assess the level of volatility for stocks traded on NYSE. They find a positive relationship between Internet search volume and trading volume.

Furthermore, we also show that positive impact of web-traffic on firm performance is more pronounced in firms that have higher agency problems. For example, our results show that web-traffic is more important in determining firm performance in civil law countries than in common law countries. Civil law countries are characterized by lower investor protection, lower enforcement mechanisms, and lower stock market development. All of these factors lead to more agency problems in civil law countries than in common law countries. We argue that in weak governance regimes, such as civil law countries, stock market participants consider information obtained from websites more value relevant. As a result, web-traffic takes more importance in civil law countries. Consistent with these findings, we also show that web-traffic is more important for firms with concentrated ownership and firms with low fixed assets. Both of these groups represent weak governance regimes. Our results are consistent with Da et al. (2009) who show that an increase in internet search volume generates higher returns for small stocks. Small stocks, on average, have higher information asymmetries than large firms. Therefore, investors consider any mechanism, such as information obtained from website, more value relevant for these firms (firms where agency problems are high). Our results indicate that, where information asymmetries are high, extent of web-traffic takes more importance in determining firm performance. Therefore, we can consider web-traffic as a substitute for traditional governance mechanisms for firms that do not already have better governance environment.

It is important to mention here that this is the first study, to the best of our knowledge, which relates web-traffic to firm performance in the MENA region. Websites or information provide on the website are not considered as of prime importance by firms. Our study indicates that firms can use their websites as a strategic tool to attract investors and improve their visibility and recognition among stock market participants. More interest among investors, eventually, will lead to better stock price performance. The remainder of the paper is organized as follows: Section 2 discusses the data used in this study. Section 3 presents the methodology and Section 4 discusses the results of the study. The paper concludes with Section 5.

2. DATA

This paper documents the relationship between web traffic generated by website of a firm and its stock price performance. The sample consists of firms listed at the MENA (Morocco, Egypt, Saudi Arabia, United Arab Emirates, Jordan, Kuwait, and Bahrain) stock markets during 2010. The following sub-sections will explain the data in greater detail.

2.1 Web Traffic Ranking

We use the web traffic provided by Alexa (www.alexa.com) to rank websites. Alexa ranking is a relative measurement on how popular a web site is among the Internet community. Alexa ranks web sites according to Alexa Traffic they get. That means a site with a rank of 1 gets more traffic than a site with rank of 2 according to Alexa. Alexa Rank is calculated by considering how many users visited a certain web site (known as reach) and how many distinct pages they viewed in that site (known as pageview). The combination of reach and pageview determines the rank of a website. It is important to note that multiple requests for the same website on the same day by the same user are counted as a single pageview. One of the drawbacks of Alexa ranking is that it depends on the data of Alexa Toolbar users. Since Alexa Toolbar is only for the users of Internet Explorer, it does not count internet traffic generated by other browsers such as Firefox and Chrome. However, there are over 10 million Alexa Toolbar users who make it a worthwhile measurement.

Table 1 documents the Alexa rankings for each country (Panel A) and each industry (Panel B). As was indicated above, higher value indicates lower ranking. Our results in Panel A show that firms headquartered in Qatar have the highest ranking followed by Saudi Arabia, United Arab Emirates, Bahrain, Morocco, Egypt, Kuwait, and Jordan. Our results indicate that investors use websites more often to get information about firms in Qatar relative to other countries. Panel B indicates that websites of Telecommunication firms generate the highest web traffic, while websites of Oil and Gas firms generate the lowest web traffic. Usually Telecommunication firms have to disseminate information to vast proportion of the population and websites provide easy way to disseminate information. Oil and Gas firms, on the other hand, have very selected audience. Consequently, personalized way of information disclosure is preferred.

Table 1: Descriptive Statistics of Web Traffic Ranking

Panel A: Web Traffic Ranking for Firms in Different Countries

Countries	Mean	Median	Standard Deviation	No. of Firms
Bahrain	293.09	248.50	185.02	32
Egypt	343.41	358.00	203.37	107
Jordan	446.06	517.50	208.41	72
Kuwait	389.69	414.00	181.43	155
Morocco	337.07	340.00	179.53	52
Qatar	252.18	224.00	150.78	43
Saudi Arabia	275.62	275.00	169.23	125
United Arab of Emirates	286.73	257.00	193.70	86

Panel B: Web Traffic Ranking for Firms in Different Industries

Industries	Mean	Median	Standard Deviation	No. of Firms
Oil and Gas	400.76	430.00	177.27	17
Basic Materials	352.84	326.00	181.70	33
Industrials	394.52	399.50	170.39	106
Consumer Goods	379.06	398.00	166.42	46
Healthcare	393.00	317.00	217.66	11
Consumer Services	267.25	202.00	202.78	43
Telecommunication	39.06	16.00	59.85	15
Utilities	210.85	158.00	144.88	7
Financials	291.80	267.50	185.85	252
Technology	253.83	208.00	248.69	6

2.2 Firm Performance

Market-adjusted returns (RET) are used as a proxy for firm performance. Market-adjusted returns are the difference between stock returns and market returns. Stock prices and market index are used to calculate the market-adjusted returns. We extract the stock price data and the corresponding market index data from Datastream. The stock price data and the market index data was obtained for the first and the last day of our sample period to compute the market-adjusted returns.

3. METHODOLOGY

The paper aims to test whether the extent of web traffic generated by a firm is related to its performance or not. In order to answer this question, we estimate a cross-sectional regression with firm performance (RET) as dependent variable and web traffic ranking (RANKING) as an independent variable. For the purpose of completeness, we also include industry dummies (IDUM) and country dummies (CDUM) in our regression equation. Our basic regression equation takes the following form.

$$RET = \alpha + \beta_1(RANKING) + \sum_{Ind} \beta^{Ind}(IDUM) + \sum_{Ctry} \beta^{Ctry}(CDUM) + \varepsilon \quad (1)$$

Mindful of the effects that firm-specific characteristics may have on firm performance, we also add a couple of firm-specific variables in our regression equation. For example, larger firms and firms paying high dividends generate more interest from stock market participants and therefore have better information environment. As a result, they may have better performance. Therefore, we add log of firm's market capitalization (SIZE) and dividend payout ratio (PoR) to capture the effect of information environment on performance. We also add total debt to total asset ratio (LEVERAGE) to capture the effect of leverage on firm performance. High leverage firms have higher bankruptcy risk and therefore have lower performance. Similarly, we also include earnings per share (EPS) to control for the effect of profitability on firm performance. Profitable firms tend to have better stock price performance. Our modified regression equation takes the following form.

$$\begin{aligned} RET &= \alpha + \beta_1(MEDIA) \\ &+ \beta_2(SIZE) + \beta_3(LEVERAGE) + \beta_4(EPS) + \beta_5(PoR) \\ &+ \sum_{Ind} \beta^{Ind}(IDUM) + \sum_{Ctry} \beta^{Ctry}(CDUM) + \varepsilon \end{aligned} \tag{2}$$

The results of our analysis are reported in Table 2. Our results show that firms that generate high amount of web traffic perform significantly better than firms that generate low amount of web traffic. We report significantly negative coefficient of RANKING for both equations. Given the fact that higher value of Alexa Rank corresponds to lower ranking, negative coefficient of RANKING indicates that firms generating higher web traffic perform better than firms generating lower web traffic. We argue that firms generating high amount of web traffic are the ones with lower information asymmetries. Since our sample firms do not engage in commerce on their websites, the only purpose of web traffic is to obtain information. Therefore, high web traffic means that more individuals are coming to website to obtain information, thereby lowering the information asymmetry regarding these firms. As a result, we observe better performance of firms with high web traffic than otherwise similar firms with low web traffic.

Table 2: Relationship between Firm Performance and Web Traffic Ranking

	Equation (1)	Equation (2)
RANKING	-0.0251***	-0.0214**
SIZE		1.8850
LEVERAGE		-0.2208*
EPS		0.1064
PoR		0.0652
Industry Dummies	Yes	Yes
Country Dummies	Yes	Yes
No. of Observations	580	329
F-Value	4.13	10.11
Adjusted-R^2	0.077	0.191

Note: The coefficient that are significant at 10% are followed by *, those at 5% and 1% by ** and *** respectively.

4. DISCUSSION OF RESULTS

Some of the important questions that arise here are: For which firms, extent of web traffic is more effective? Is it for firms that already have better information environment or is it for firms that have higher information asymmetries? Does the extent of web traffic compliments governance environment or does it substitutes for governance environment? We aim to answer these questions by re-estimating Equation (2) for sub-samples representing different governance and information regimes.

4.1 Web Traffic and Firm Performance under Different Legal Regimes

For the purpose of this paper, we characterize legal regimes into common law and civil law. Following La Porta et al. (1999), we classify Bahrain, Saudi Arabia, and United Arab Emirates as common law countries, and

Egypt, Jordan, Kuwait, Morocco, and Qatar as civil law countries. Civil law countries, usually, have lower investor protection, lower enforcement mechanisms, and lower stock market development. All of these factors lead to more agency problems in civil law countries relatively to common law countries. We argue that any mechanism that can lower the agency problems will be more valued in civil law countries than in common law countries (where agency problems are already low). We consider extent of web traffic as one such mechanism that can help reduce agency problems. As a result, we expect a stronger relationship between the extent of web traffic and firm performance in civil law countries than in common law countries. Our results from re-estimation of Equation (2) are reported in Table 3. We show that extent of web traffic is an important determinant of firm performance in civil as well as in common law countries. We report significantly negative coefficient of RANKING for both groups. However, as expected, our results indicate that extent of web traffic is more important in civil law countries than in common law countries. The magnitude of coefficient of RANKING is higher in civil law countries than in common law countries. Our results indicate that, where information asymmetries are high, extent of web traffic takes more importance in determining firm performance. Therefore, we can consider web traffic as a substitute for traditional governance mechanisms for firms that do not already have better governance environment.

Table 3: Relationship between Firm Performance and Web Traffic Ranking in Different Legal Regimes

	Common Law Countries	Civil Law Countries
RANKING	-0.0196*	-0.0242*
SIZE	-0.0882	3.1734
LEVERAGE	-0.0630	-0.3273
EPS	-0.2055	0.1010
PoR	0.0621*	0.0710
Industry Dummies	Yes	Yes
Country Dummies	Yes	Yes
No. of Observations	148	181
F-Value	3.33	8.23
Adjusted-R^2	0.121	0.124

Note: The results significant at 10% significance level are followed by *, at 5% significance level by **, and at 1% a significance level by***.

4.2 Web Traffic and Firm Performance under Different Ownership Regimes

Prior literature considers ownership structure as an important governance device. Concentrated ownership structures provide managers and controlling shareholders with means to evade effective disclosure of information (Leuz et al., 2003). Poor information disclosure exacerbates information asymmetries between insiders and outsiders and result in agency problems. Prior literature also suggests that high ownership concentration creates an entrenchment problem that allows controlling shareholders' self-dealings to go unchallenged by boards of directors. On the other hand, dispersed ownership structures reduce some of these agency problems by taking away powers from managers and insiders. In order to test whether ownership structure affects the relationship between extent of web traffic and firm performance, we divide our sample into two groups – one with concentrated ownership and the other with dispersed ownership. We define concentrated ownership as the case where insiders hold more than 50% of the shares and dispersed ownership as the case where insiders do not hold absolute majority. We re-estimate Equation (2) for both groups and report our results in Table 4. As was expected, we show stronger relationship between extent of web traffic and firm performance for concentrated ownership firms. Our results show significantly negative coefficient of RANKING for this group. On the other hand, our results for dispersed ownership firms show insignificant coefficient of RANKING for this group. As was argued earlier, when information asymmetries are high (concentrated ownership firms), extent of web traffic takes more importance in determining firm performance. Therefore, we can consider web traffic as a substitute for traditional governance mechanisms.

Table 4: Relationship between Firm Performance and Web Traffic Ranking in Different Ownership Regimes

	Concentrated Ownership	Dispersed Ownership
RANKING	-0.0267**	0.0158
SIZE	1.8995	2.7715**
LEVERAGE	-0.2553*	-0.0879
EPS	0.0976	0.2834
PoR	0.0713	-0.0179
Industry Dummies	Yes	Yes
Country Dummies	Yes	Yes
No. of Observations	266	62
F-Value	10.00	6.45
Adjusted-R^2	0.179	0.518

Note: The results significant at 10% significance level are followed by *, at 5% significance level by **, and at 1% a significance level by***.

4.3 Web Traffic and Firm Performance under Different Tangibility Regimes

In the context of agency problems, the kind of assets a firm has is critical in ensuring whether outside investors trust it with their capital. External capital demands a higher proportion of tangibility of assets when financial contractibility is poor and outside financiers are weakly protected. Therefore, tangibility is measure of investors' interest in a firm. We define tangibility by fixed asset to total asset ratio. As expected, our results show that extent of web traffic is a significant determinant of firm performance in a sub-sample of firms with low tangibility. We report negative and significant coefficient of RANKING for this group of firms. However, our results show that performance of firms with higher tangibility of assets is unaffected by the extent of web traffic. We report insignificant coefficient of RANKING for this group. As was argued earlier, when information asymmetries are high (low tangibility), extent of web traffic takes more importance in determining firm performance. Therefore, we can consider web traffic as a substitute for traditional governance mechanisms.

Table 5: Relationship between Firm Performance and Web Traffic Ranking in Different Tangibility Regimes

	High Tangibility	Low Tangibility
RANKING	-0.0074	-0.0442***
SIZE	0.0139	2.1045
LEVERAGE	-0.0610	-0.5000***
EPS	0.1675	0.0490
PoR	0.1200*	0.0193
Industry Dummies	Yes	Yes
Country Dummies	Yes	Yes
No. of Observations	173	156
F-Value	8.70	9.33
Adjusted-R^2	0.174	0.292

Note: The results significant at 10% significance level are followed by *, at 5% significance level by **, and at 1% a significance level by***.

5. CONCLUSION

This paper explores the relationship between the extent of web traffic generated by a firm and its performance in the MENA (Morocco, Egypt, Saudi Arabia, United Arab Emirates, Jordan, Kuwait, and Bahrain) region during 2010. Our results show that higher web traffic corresponds to better firm performance. We argue that higher web traffic on a firm's website relates to more information being disseminated regarding a firm. As a result, information asymmetries and agency problems go down, resulting in better performance. Our results also show that extent of web traffic is more important for firms with higher agency problem. For example, we show stronger

impact of web traffic on firms in civil law countries, firms with concentrated ownership, and firms with lower amount of tangible assets. It shows that web traffic can play a substitute for traditional governance mechanisms in the MENA region.

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